

(12) SOLICITUD INTERNACIONAL PUBLICADA EN VIRTUD DEL TRATADO DE COOPERACIÓN  
EN MATERIA DE PATENTES (PCT)

(19) Organización Mundial de la Propiedad  
Intelectual  
Oficina internacional



(43) Fecha de publicación internacional  
6 de Septiembre de 2002 (06.09.2002)

PCT

(10) Número de Publicación Internacional  
**WO 02/068654 A3**

(51) Clasificación Internacional de Patentes: C12N 15/48,  
15/62, C07K 14/065, 14/155

(74) Mandatario: VAZQUEZ CASTILLO, Mariela; Depar-  
tamento de Patentes, Ave. 31 entre 158 y 190, Cubanacán,  
Playa, Ciudad de La Habana 10600 (CU).

(21) Número de la solicitud internacional: PCT/CU02/00001

(22) Fecha de presentación internacional:  
22 de Febrero de 2002 (22.02.2002)

(25) Idioma de presentación: español

(26) Idioma de publicación: español

(30) Datos relativos a la prioridad:  
57/2001 28 de Febrero de 2001 (28.02.2001) CU

(81) Estados designados (nacional): AE, AG, AL, AM, AT,  
AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR,  
CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE,  
GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,  
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,  
MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU,  
SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG,  
US, UZ, VN, YU, ZA, ZM, ZW.

(84) Estados designados (regional): patente ARIPO (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), patente  
euroasiática (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
patente europea (AT, BE, CH, CY, DE, DK, ES, FI, FR,  
GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), patente OAPI  
(BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,  
SN, TD, TG).

(71) Solicitante (para todos los Estados designados salvo  
US): CENTRO DE INGENIERIA GENETICA Y  
BIOTECNOLOGIA [CU/CU]; Ave. 31 entre 158 y 190,  
Cubanacán, Playa, Ciudad de La Habana 10600 (CU).

(72) Inventores; e

(75) Inventores/Solicitantes (para US solamente): IGLESIAS  
PEREZ, Enrique [CU/CU]; Edif. 25 Apto. 103, Reparto  
"Camilo Cienfuegos", Habana del Este, Ciudad de La  
Habana 11700 (CU). VAZQUEZ BLOMQUIST, Dania,  
M. [CU/CU]; Calle 49 No. 2805 entre 28 y 49A, Kohly,  
Playa, Ciudad de La Habana 10600 (CU). DUARTE  
CANO, Carlos, A. [CU/CU]; Ave. 31 No. 18207 entre  
182 y 184, Playa, Ciudad de La Habana 10600 (CU).

Publicada:

— con informe de búsqueda internacional

(88) Fecha de publicación del informe de búsqueda  
internacional: 13 de Marzo de 2003

Para códigos de dos letras y otras abreviaturas, véase la sección  
"Guidance Notes on Codes and Abbreviations" que aparece al  
principio de cada número regular de la Gaceta del PCT.

(54) Title: RECOMBINANT POXVIRUS FOR CHIMERIC PROTEINS OF THE HUMAN IMMUNODEFICIENCY VIRUS

(54) Título: POXVIRUS RECOMBINANTES PARA PROTEINAS QUIMERICAS DEL VIRUS DE LA INMUNODEFICIENCIA  
HUMANA

(57) Abstract: The invention relates to HIV chimeric genes formed by the union of fragments of different genes of said virus, wherein said fragments contain epitopes for cytotoxic T cells (CTL) or HIV-1 auxiliary T cells, which are presented by a wide range of antigens of type 1 Major Human Histocompatibility System (HLA-1). Recombinant poxvirus are obtained from said genes, which are useful for prophylactic and therapeutic vaccination against HIV/AIDS infection, are capable of generating a protective immune cell response in vaccinated laboratory animals and are recognized by the CTL lymphocytes of HIV/AIDS patients.

(57) Resumen: Se describen genes quiméricos del VIH formados por la unión de fragmentos de diferentes genes de este virus, donde estos fragmentos contienen epítomos para células T citotóxicas (CTL) o T auxiliaadoras del VIH-1, los cuales son presentados por una amplia gama de antígenos del Sistema Principal de Histocompatibilidad Humano tipo 1 (HLA-1). A partir de estos genes se obtienen poxvirus recombinantes útiles en la vacunación profiláctica y terapéutica contra la infección por VIH/SIDA capaces de generar una respuesta inmune celular protectora en animales de laboratorio inmunizados y siendo reconocidos por los linfocitos CTL de pacientes de VIH/SIDA.

WO 02/068654 A3

B16

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/CU 02/00001

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 7 C12N15/48 C12N15/62 C07K14/065 C07K14/155

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, BIOSIS, EMBL

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 98 21354 A (VIROGENETICS CORP) 22 May 1998 (1998-05-22) the whole document ---	
A	EP 0 412 766 A (MEDICAL RES COUNCIL ;UNIV OXFORD (GB)) 13 February 1991 (1991-02-13) the whole document ---	
A	US 5 174 993 A (PAOLETTI ENZO) 29 December 1992 (1992-12-29) the whole document ---	
A	US 5 505 941 A (PAOLETTI ENZO) 9 April 1996 (1996-04-09) the whole document ---	
	-/--	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"Z" document member of the same patent family

Date of the actual completion of the international search

4 November 2002

Date of mailing of the international search report

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentaan 2  
 NL - 2280 HV Rijswijk  
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
 Fax: (+31-70) 340-3018

Authorized officer

GONZALEZ, G

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/CU 02/00001

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	HANKE TOMAS ET AL: "Effective induction of simian immunodeficiency virus-specific cytotoxic T lymphocytes in macaques by using a multiepitope gene and DNA prime-modified vaccinia virus Ankara boost vaccination regimen." JOURNAL OF VIROLOGY, vol. 73, no. 9, 1999, pages 7524-7532, XP002219831 ISSN: 0022-538X ---	
A	DUARTE CARLOS A ET AL: "Epitope mapping, V-region DNA sequence, and neutralizing Fab fragments of two monoclonal antibodies against the HIV-1 V3 loop." IMMUNOTECHNOLOGY (AMSTERDAM), vol. 2, no. 1, 1996, pages 11-20, XP002219832 ISSN: 1380-2933 ---	
A	WHITTON J LINDSAY ET AL: "A "string-of-beads" vaccine, comprising linked minigenes, confers protection from lethal dose virus challenge." JOURNAL OF VIROLOGY, vol. 67, no. 1, 1993, pages 348-352, XP002219833 ISSN: 0022-538X -----	

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/CU 02/00001

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9821354	A	22-05-1998	AU 733079 B2	03-05-2001
			AU 5174598 A	03-06-1998
			EP 0956360 A1	17-11-1999
			JP 2000509999 T	08-08-2000
			NO 992369 A	06-07-1999
			WO 9821354 A1	22-05-1998
-----				
EP 0412766	A	13-02-1991	AT 103294 T	15-04-1994
			CA 2064691 A1	10-02-1991
			DE 69007571 D1	28-04-1994
			DE 69007571 T2	08-09-1994
			DK 412766 T3	18-07-1994
			EP 0412766 A1	13-02-1991
			ES 2054256 T3	01-08-1994
			WO 9101996 A1	21-02-1991
			GB 2250994 A ,B	24-06-1992
			HK 141494 A	23-12-1994
			JP 4507100 T	10-12-1992
			SG 130094 G	13-01-1995
			US 5700635 A	23-12-1997
			-----	
US 5174993	A	29-12-1992	US 4769330 A	06-09-1988
			US 4603112 A	29-07-1986
			US 5110587 A	05-05-1992
			US 6267965 B1	31-07-2001
			US 5482713 A	09-01-1996
			US 5583028 A	10-12-1996
			US 6340462 B1	22-01-2002
			US 5972597 A	26-10-1999
			US 5942235 A	24-08-1999
			US 6183750 B1	06-02-2001
			US 5338683 A	16-08-1994
			US 5378457 A	03-01-1995
			US 5505941 A	09-04-1996
			AT 900788 A ,B	15-05-1995
			AU 690210 B2	23-04-1998
			AU 1628895 A	17-08-1995
			AU 2427588 A	02-05-1989
			AU 7741298 A	08-10-1998
			BE 1002134 A5	24-07-1990
			CH 679934 A5	15-05-1992
			CH 679933 A5	15-05-1992
			DE 3890874 T0	21-12-1989
			DK 203689 A	27-06-1989
			FR 2621487 A1	14-04-1989
			GB 2217718 A ,B	01-11-1989
			IE 60309 B1	29-06-1994
			IT 1229484 B	03-09-1991
			JP 2500879 T	29-03-1990
			JP 2002186494 A	02-07-2002
			KR 9711149 B1	07-07-1997
			NL 8820679 A	03-07-1989
			NZ 225970 A	29-01-1991
			WO 8903429 A1	20-04-1989
			ZA 8806415 A	26-04-1989
			AT 50791 T	15-03-1990
			AU 561816 B2	21-05-1987
			AU 9180682 A	30-06-1983

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/CU 02/00001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5174993	A	DE 3280128 D1	12-04-1990
		DK 109497 A	24-09-1997
		DK 572482 A	25-06-1983
		EP 0083286 A2	06-07-1983
		IL 67537 A	28-02-1986
		IT 1191150 B	24-02-1988
		JP 1941428 C	23-06-1995
		JP 6071429 B	14-09-1994
		JP 58129971 A	03-08-1983
		NZ 202833 A	14-03-1986
		PH 22658 A	14-11-1988
		ZA 8209386 A	28-09-1983
		IT 1165451 B	22-04-1987
US 5505941	A	09-04-1996	
		US 4722848 A	02-02-1988
		US 4603112 A	29-07-1986
		US 4769330 A	06-09-1988
		US 6340462 B1	22-01-2002
		US 5942235 A	24-08-1999
		US 6183750 B1	06-02-2001
		US 5378457 A	03-01-1995
		AT 900788 A ,B	15-05-1995
		AU 690210 B2	23-04-1998
		AU 1628895 A	17-08-1995
		AU 2427588 A	02-05-1989
		AU 7741298 A	08-10-1998
		BE 1002134 A5	24-07-1990
		CH 679934 A5	15-05-1992
		CH 679933 A5	15-05-1992
		DE 3890874 T0	21-12-1989
		DK 203689 A	27-06-1989
		FR 2621487 A1	14-04-1989
		GB 2217718 A ,B	01-11-1989
		IT 1229484 B	03-09-1991
		JP 2500879 T	29-03-1990
		JP 2002186494 A	02-07-2002
		KR 9711149 B1	07-07-1997
		NL 8820679 A	03-07-1989
		NZ 225970 A	29-01-1991
		WO 8903429 A1	20-04-1989
		US 5174993 A	29-12-1992
		IE 60309 B1	29-06-1994
		ZA 8806415 A	26-04-1989
		US 6267965 B1	31-07-2001
		US 5482713 A	09-01-1996
		US 5583028 A	10-12-1996
		US 5972597 A	26-10-1999
		US 5338683 A	16-08-1994
		US 5110587 A	05-05-1992
		AT 50791 T	15-03-1990
		AU 561816 B2	21-05-1987
		AU 9180682 A	30-06-1983
		DE 3280128 D1	12-04-1990
		DK 109497 A	24-09-1997
		DK 572482 A	25-06-1983
		EP 0083286 A2	06-07-1983
		IL 67537 A	28-02-1986
		IT 1165451 B	22-04-1987

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/CU 02/00001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5505941	A	JP 1941428 C	23-06-1995
		JP 6071429 B	14-09-1994
		JP 58129971 A	03-08-1983
		NZ 202833 A	14-03-1986
		PH 22658 A	14-11-1988
		IT 1191150 B	24-02-1988
-----			

Si clonal N°  
PCT/CU 02/00001

Formulario PCT/ISA/210 (segunda hoja) (Julio de 1992)

# INFORME DE BUSQUEDA INTERNACIONAL

S: rnsional N°  
PCT/CU 02/00001

C.(continuación) DOCUMENTOS CONSIDERADOS PERTINENTES		
Categoría*	Identificación de los documentos citados, con indicación, cuando se adecuado, de los pasajes pertinentes	N° de las reivindicaciones pertinentes
A	<p>HANKE TOMAS ET AL: "Effective induction of simian immunodeficiency virus-specific cytotoxic T lymphocytes in macaques by using a multiepitope gene and DNA prime-modified vaccinia virus Ankara boost vaccination regimen." JOURNAL OF VIROLOGY, vol. 73, num. 9, 1999, páginas 7524-7532, XP002219831 ISSN: 0022-538X</p> <p>---</p>	
A	<p>DUARTE CARLOS A ET AL: "Epitope mapping, V-region DNA sequence, and neutralizing Fab fragments of two monoclonal antibodies against the HIV-1 V3 loop." IMMUNOTECHNOLOGY (AMSTERDAM), vol. 2, num. 1, 1996, páginas 11-20, XP002219832 ISSN: 1380-2933</p> <p>---</p>	
A	<p>WHITTON J LINDSAY ET AL: "A "string-of-beads" vaccine, comprising linked minigenes, confers protection from lethal dose virus challenge." JOURNAL OF VIROLOGY, vol. 67, num. 1, 1993, páginas 348-352, XP002219833 ISSN: 0022-538X</p> <p>-----</p>	



# INFORME DE BUSQUEDA INTERNACIONAL

So  
ernacional N°  
PCT/CU 02/00001

Documento de patente citado en el informe de búsqueda	Fecha de publicación	Miembro(s) de la familia de patentes	Fecha de publicación
WO 9821354 A	22-05-1998	AU 733079 B2	03-05-2001
		AU 5174598 A	03-06-1998
		EP 0956360 A1	17-11-1999
		JP 2000509999 T	08-08-2000
		NO 992369 A	06-07-1999
		WO 9821354 A1	22-05-1998
EP 0412766 A	13-02-1991	AT 103294 T	15-04-1994
		CA 2064691 A1	10-02-1991
		DE 69007571 D1	28-04-1994
		DE 69007571 T2	08-09-1994
		DK 412766 T3	18-07-1994
		EP 0412766 A1	13-02-1991
		ES 2054256 T3	01-08-1994
		WO 9101996 A1	21-02-1991
		GB 2250994 A ,B	24-06-1992
		HK 141494 A	23-12-1994
		JP 4507100 T	10-12-1992
		SG 130094 G	13-01-1995
		US 5700635 A	23-12-1997
US 5174993 A	29-12-1992	US 4769330 A	06-09-1988
		US 4603112 A	29-07-1986
		US 5110587 A	05-05-1992
		US 6267965 B1	31-07-2001
		US 5482713 A	09-01-1996
		US 5583028 A	10-12-1996
		US 6340462 B1	22-01-2002
		US 5972597 A	26-10-1999
		US 5942235 A	24-08-1999
		US 6183750 B1	06-02-2001
		US 5338683 A	16-08-1994
		US 5378457 A	03-01-1995
		US 5505941 A	09-04-1996
		AT 900788 A ,B	15-05-1995
		AU 690210 B2	23-04-1998
		AU 1628895 A	17-08-1995
		AU 2427588 A	02-05-1989
		AU 7741298 A	08-10-1998
		BE 1002134 A5	24-07-1990
		CH 679934 A5	15-05-1992
		CH 679933 A5	15-05-1992
		DE 3890874 T0	21-12-1989
		DK 203689 A	27-06-1989
		FR 2621487 A1	14-04-1989
		GB 2217718 A ,B	01-11-1989
		IE 60309 B1	29-06-1994
		IT 1229484 B	03-09-1991
		JP 2500879 T	29-03-1990
		JP 2002186494 A	02-07-2002
		KR 9711149 B1	07-07-1997
		NL 8820679 A	03-07-1989
		NZ 225970 A	29-01-1991
		WO 8903429 A1	20-04-1989
		ZA 8806415 A	26-04-1989
		AT 50791 T	15-03-1990
		AU 561816 B2	21-05-1987
		AU 9180682 A	30-06-1983

# INFORME DE BUSQUEDA INTERNACIONAL

Se  
 emacional N°  
 PCT/CU 02/00001

Documento de patente citado en el Informe de búsqueda	Fecha de publicación	Miembro(s) de la familia de patentes	Fecha de publicación
US 5174993 A		DE 3280128 D1 DK 109497 A DK 572482 A EP 0083286 A2 IL 67537 A IT 1191150 B JP 1941428 C JP 6071429 B JP 58129971 A NZ 202833 A PH 22658 A ZA 8209386 A IT 1165451 B	12-04-1990 24-09-1997 25-06-1983 06-07-1983 28-02-1986 24-02-1988 23-06-1995 14-09-1994 03-08-1983 14-03-1986 14-11-1988 28-09-1983 22-04-1987
US 5505941 A	09-04-1996	US 4722848 A US 4603112 A US 4769330 A US 6340462 B1 US 5942235 A US 6183750 B1 US 5378457 A AT 900788 A ,B AU 690210 B2 AU 1628895 A AU 2427588 A AU 7741298 A BE 1002134 A5 CH 679934 A5 CH 679933 A5 DE 3890874 T0 DK 203689 A FR 2621487 A1 GB 2217718 A ,B IT 1229484 B JP 2500879 T JP 2002186494 A KR 9711149 B1 NL 8820679 A NZ 225970 A WO 8903429 A1 US 5174993 A IE 60309 B1 ZA 8806415 A US 6267965 B1 US 5482713 A US 5583028 A US 5972597 A US 5338683 A US 5110587 A AT 50791 T AU 561816 B2 AU 9180682 A DE 3280128 D1 DK 109497 A DK 572482 A EP 0083286 A2 IL 67537 A IT 1165451 B	02-02-1988 29-07-1986 06-09-1988 22-01-2002 24-08-1999 06-02-2001 03-01-1995 15-05-1995 23-04-1998 17-08-1995 02-05-1989 08-10-1998 24-07-1990 15-05-1992 15-05-1992 21-12-1989 27-06-1989 14-04-1989 01-11-1989 03-09-1991 29-03-1990 02-07-2002 07-07-1997 03-07-1989 29-01-1991 20-04-1989 29-12-1992 29-06-1994 26-04-1989 31-07-2001 09-01-1996 10-12-1996 26-10-1999 16-08-1994 05-05-1992 15-03-1990 21-05-1987 30-06-1983 12-04-1990 24-09-1997 25-06-1983 06-07-1983 28-02-1986 22-04-1987

